

Lab Demonstration Handout: SCH3U—Full Metal Alchemy: Single Displacement Edition!

PART A- For the Audience

Hark! I come bearing good news! Fresh from my expedition to the deepest, darkest recesses of Scarborough, I have found the miraculous **Rosetta Stone**! Using but meager platelets that I have precisely shorn from the sacred stone, I shall now demonstrate how it can be instantly transmuted into forms mimicking all the wonders of the earth and the heavens above!!!

Armour from the Depths of the Raspberry Sea!

I have but to drop a platelet of **Rosetta Stone** into simple, household **Raspberry Juice**...

SHAZBOT!!!

... and within seconds, the **Stone** transmogrifies! As the dull visage of the stone bubbles away, it is replaced with the unbreakable **Armour of Poseidon**! Tremble before its cerulean majesty, ye miserable mortals!!!

Devoured by the Blood of a Fearsome Sea Dragon of Days Long Past!

Behold! Through means that must remain unrevealed, I have procured a vial of **Kronosaurus Blood**! Legend has it that this dread elixir is the only substance in the cosmos that can corrode the **Rosetta Stone**... let us put that adage to the test...

BOOYAKASHA!!!

... without warning, the **Rosetta Stone** fragment crumbles in a maelstrom of bubbles and fizz... after some time, a sediment of **Blood Dust** settles at the bottom of the flask. Be grateful, my hapless peons, for today you have seen that blood truly **can** be gotten from a stone!!!

The Juice of Heisenberg summons Serpent Scales Direct from Sett Himself

I now present to you simple **Anti-Freeze** (known in New Mexico as **Heisenberg's Juice**). When a shard of **Rosetta Stone** is plunged into its bewitching translucency...

SLEAZARDO!!!

... the stone is surrounded by a plague of iridescent **Python Scales** that tint the immediately adjacent liquid a sinister green. **Warning:** repeating this experience thrice in rapid succession may cost you your mortal soul!!!

The Finale: The Conjuring of Solid Silver!

For my final exhibition, I must make use of a vial full of **Mermaid Tears**... I can scarcely quantify how many mischievous sirens I had to net and torture to procure a sample of this volume. Water under the bridge! Let's see what happens when the tears touch the **Rosetta Stone**...

TREPANGA BANGAI!!!

... Zounds! The stone becomes instantly encased in dazzling pebbles of **Pure Silver**!!! Huzzah! I shall soon be the first trillionaire in the universe... and you fine fools were here to witness the genesis of my wealth... don't you feel special?!!!

DISCUSSION QUESTIONS

- I) What is this magic **Rosetta Stone**? Could such a substance truly exist?!
- II) Can you deduce the true contents of the magical potions that comprise the rainbow of evil?

PART B- For Future Performers

CURRICULUM RELEVANCE

Class: SCH3U **Unit:** C. Chemical Reactions

Specific Expectation: C2.5: Predict the products of single displacement reactions, using the metal activity series

- demonstration to be used as a minds-on feature in a class early on in the presentation of Unit C.
- assumes that students have some familiarity with the concept of single displacement reactions, but can precede actual practical experience (could well be used to lead into a lab activity period in which students perform similar reactions with less toxic and less expensive chemicals)

STAGE DIRECTION

- **before class starts**, draw the metal activity series along the top of the chalkboard
- at the beginning of the presentation, read it aloud as if it were two or three words. This subliminally encourages students to formulate a mnemonic to memorize the sequence

MATERIALS

Solid Magnesium

1 M Cobalt (II) Chloride (aqueous)

1 M Iron(III) Chloride (aqueous)

0.5 M Copper(II) Sulphate (aqueous)

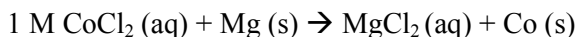
2.5% Silver Nitrate (aqueous)

100 mL Round-Bottomed Tubes

Forceps

REACTIONS

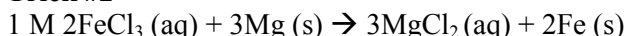
Trick #1



The solid cobalt will gradually accumulate on the surface of the magnesium metal.

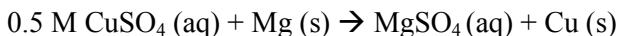
IMPORTANT: Cobalt(II) chloride is toxic, and should not be allowed to touch skin

Trick #2



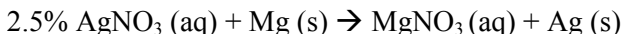
The magnesium will be eaten away by the ferric chloride fairly rapidly, but the iron dust will take a few seconds to appear on the bottom of the tube.

Trick #3



The magnesium will react immediately with the copper(II) sulphate, producing green rust on the magnesium and a localized green tint in the solution.

Trick #4



The magnesium will actually appear to turn silver almost immediately, in a clonal fashion, and the metal will quickly convert to pebbles of silver.